

**PLANT PATENT**

**[File No. 10451.0039.NPUS01]**

**APPLICATION FOR UNITED STATES PLANT PATENT**

**for**

**CHRYSANTHEMUM PLANT NAMED 'NIRVANA IMPROVED'**

**by**

**Mark R. Boeder, Koningsplein 41, 2518 J.H., Den Haag, The Netherlands**

EXPRESS MAIL MAILING LABEL: EL615212705US

DATE OF DEPOSIT: July 17, 2003

I hereby certify that this paper or fee is being deposited with the United States Postal Service "EXPRESS MAIL POST OFFICE TO ADDRESSEE" service under 37 C.F.R. 1.10 on the date indicated above and is addressed to: Mail Stop Patent Application, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

  
Beverly A. Lee

This application claims the benefit of U.S. Provisional Application No. 60/396,824, filed July 17, 2002.

#### LATIN NAME OF THE GENUS AND SPECIES

Botanical classification: *Dendranthema grandiflora*.

5

#### VARIETY DENOMINATION

The new Chrysanthemum variety denomination is 'Nirvana Improved.'

#### BACKGROUND OF THE INVENTION

The present invention comprises a new and distinct cultivar of Chrysanthemum botanically known as *Dendranthema grandiflora*, and referred to by the cultivar name 'Nirvana Improved'.

'Nirvana Improved', identified as 20668-1 originated from a cross made in a controlled breeding program in Cleangro Limited, Vinnetrow Road, Chichester, West Sussex PO10 7XQ, United Kingdom. The female parent of the new variety is an undistributed, unpatented seedling identified as P452C7. The male parent of the new variety is an undistributed, unpatented seedling identified as 20038-0. The new variety 'Nirvana Improved' has been asexually reproduced by vegetative cuttings in Chichester, West Sussex, United Kingdom and the distinguishing characteristics are retained through successive generations of asexual reproduction.

#### BRIEF SUMMARY OF THE INVENTION

'Nirvana Improved' is a pot type of Chrysanthemum plant variety having yellow and red single flowers with a light green disc.

#### Comparison with Parent

Plants of the new Chrysanthemum variety 'Nirvana Improved' are dissimilar to the parent cultivar 'P452C7' in plant habitat and growth rate. In side-by-side comparisons in Chichester, West Sussex, United Kingdom, under commercial practice, plants of the new Chrysanthemum variety 'Nirvana Improved' differed from plants of the parent cultivar 'P452C7' in the following characteristics.

1. The new variety 'Nirvana Improved' produces yellow and red single flowers whereas the parent cultivar 'P452C7' produces white and purple flowers flowers.
2. Plants of the new variety 'Nirvana Improved' have larger and taller inflorescence than plants of the parent cultivar 'Nirvana Improved'.

#### Comparison with Other Varieties

Plants of the new Chrysanthemum variety 'Nirvana Improved' are similar to the cultivar 'Machismo Time' (U.S. Plant Patent Application Ser. No. 09/957493) in plant habitat and growth rate. However, in side-by-side comparisons in Chichester, West Sussex, United Kingdom, under commercial practice, plants of the new Chrysanthemum variety 'Nirvana Improved' compared to plants of the cultivar 'Machismo Time' in the following characteristics.

1. The new variety 'Nirvana Improved' produces yellow and red single flowers whereas the cultivar 'Machismo Time' produces yellow and red single flowers.
2. Plants of the new variety 'Nirvana Improved' have larger and taller inflorescence than plants of the cultivar 'Machismo Time'.
3. The flowers of the new variety 'Nirvana Improved' have more yellow contrast than 'Machismo Time'.

#### BRIEF DESCRIPTION OF ILLUSTRATIONS

Typical specimens of the plant and flowers for the new Chrysanthemum variety 'Nirvana Improved' are shown in the accompanying digital photograph. The colors shown are as true as possible within the usual limits of this kind of illustration. Figure 1 is a whole plant view of the new variety 'Nirvana Improved' grown in a pot. The plant shown in the illustration and described here is 52 days from the commencement of Short Days.

#### DETAILED BOTANICAL DESCRIPTION

The following description of the new Chrysanthemum variety 'Nirvana Improved' is of plants grown in a greenhouse in Chichester, West Sussex, United

Kingdom in the month of February. The cultivar has not been observed under all possible environmental conditions. The phenotype may vary significantly with variations in the environment such as temperature, length of day and light intensity, without any variance in genotype. The commercial classification of the new variety is a pot Chrysanthemum.

Plants of the new variety have been grown successfully under temperature conditions averaging about 18°C at night and about 24°C to 25°C during the day under light conditions of about 5000 to 6000 foot candles. The plants respond well to the use of growth retardant, such as B9 treatment. To produce a commercial product the plants may be pinched once with the center bud removed. The typical container size for commercial growth is 14 cm. It has been observed that the shelf life of the new variety is about 24 days with a response time of about 7.5 weeks. The new variety is suitable for growth in a temperature range of 17°C to 28°C

The following description is with respect to a plant produced as pot Chrysanthemum. In the description of this new Chrysanthemum variety, color values have been taken from the Royal Horticultural Society Colour Chart (R.H.S.C.C.).

#### Plant

Plant type: Pot

Habit: Upright and free branching

Height: 21 cm

Width: 36 cm

Branching characteristics: Upright and free branching

Length of Lateral Branches: 5-12 cm

Number of Breaks from Pinch: 3-5

Stem Color: 137C

Response Time: 52

Vigor: Medium / Tall

Shelf Life: 24 days

Disease/Pest (Susceptibility/Resistance observed): None observed to date

Growth retardant type and treatment: 3 applications of 2.5 gm/litre B9 @ 2, 21 and 28 days after sticking of unrooted cuttings.

The plants were grown for 3 weeks in Long Day conditions (20 hours of light) and then transferred to Short Day conditions (13 hours of dark).

5 Propagation:

*Type:* Vegetative Propagation Via Stem Cuttings

*Time to rooting:* 12–14 days with soil temperatures of 18°C

*Rooting habit:* Fine and Fibrous

Foliage

10 Number of Leaves Per Lateral Branch: 8-11

Compound or single: Single

Arrangement of Leaves: Alternate

Shape of Leaf: typically 5 lobed ovate

Size of Leaf:                      *Width (cm):* 5-8.5 cm                      *Length (cm):* 3-10 cm

15 Leaf Apex: Acute

Base: Cordate

Attachment: Petioled

Aspect: Slightly undulating

Margin: Palmetely lobed

20 Surface characteristics:                      *Top:* Slightly pubescent

*Bottom:* Pubescent

Petiole:                      *Color:* 139C

*Length:* 0.5-2.5 cm

Venation: Net prominent midvein at underside

25 *Color: upper side:* Near 138B

*under side:* Near 138B

Color:                      Mature Leaf, *upper side:* Near 137A; *under side:* Near 137B

Young Leaf, *upper side:* Near 137B; *under side:* Near 138A

## Flower

- Flower appearance: Matte
- Flower type: Single
- Flower form: Flat
- 5 Flower shape: Circular
- Flower habit: Flat Capitulum
- Number of blossoms per branch: 3-5
- Inflorescence form: Cyme
- Depth of fully expanded blossoms: 1.5 cm
- 10 Diameter of fully expanded blossoms: 9 cm
- Sepals:
- Number:* 25-30
- Outer Color:* Near 137C
- Length:* 0.5-0.9 cm
- 15 *Width:* 0.2-0.5 cm
- Texture/Appearance:* Pubescent
- Peduncle: peduncle length is shortest at the terminal flower and progressively longer moving down the stem.
- 20 *Length:* 3-10 cm, average 5 cm
- Color:* Near 137D
- Surface:* Pubescent
- Habit:* Slightly curving
- Strength:* Medium
- 25 Pedicel: *Length:* terminal: 3-6 cm; lateral 5-8 cm
- Color:* Near 139C
- Surface:* Pubescent
- Habit:* Slightly curving
- Strength:* Medium
- 30 Ray Florets:
- Form/Shape:* Straight
- Texture/Appearance* Matte
- Number per flower:* 30
- Length:* 2.5 cm; *Width:* 0.8 cm
- 35 *Apex:* Rounded

*Base:* Tapered  
*Margin:* Entire

Disc florets:

- 5        *Form/Shape:* Cylindrical  
         *Texture/Appearance:* Shiny  
         *Number per flower:* 150-200  
         *Length:* 0.6 cm; *Width:* 0.1 cm  
         *Diameter of disc:* 1.5 cm

Fragrance: None

- 10      Flower Bud (at onset of color):

*Length:* 0.5 cm  
         *Diameter:* 1 cm  
         *Form/shape:* Globular

General flower color:

- 15            1.      Ray florets, *upper side*:

*Immature:* Near 16B and 44B  
                         *Mature:* Near 16C and 44B  
                         *Older/Fading:* Near 16C and 44C

2.      Ray florets, *under side*:

- 20                    *Immature:* Near 16C and 44B  
                         *Mature:* Near 16D and 44B  
                         *Older/Fading:* Near 16D and 44B

3.      Disc florets:

- 25                    *Immature:* Near 143C  
                         *Mature:* Near 151B  
                         *Older/Fading:* Near 151D

4.      Bud: 44C

Flower progression with age: Flower form does not change but there is a slight fading of color.

30

## Reproductive Organs

Ray Florets: Pistillate

5

*Pistil Number:* >25  
*Stigma color:* Near 7A  
*Stigma shape:* Forked  
*Style Color:* Near 145C  
*Style Length:* 0.4 cm

Disc Florets: Pistillate

10

*Pistil Number:* >25  
*Stigma color:* Near 7A  
*Stigma shape:* Forked  
*Style Color:* Near 145C  
*Style Length:* 0.4 cm

15. 95

Staminate: none observed to date

Fruit and Seeds: None observed to date